

**ABSTRACT**

A construction is provided for a finned heat sink constructed from a plurality of components separately formed from graphite materials. The components include a base and a plurality of fins. In one embodiment, the base is constructed from a first graphite material, and a plurality of elongated fins are constructed from a second graphite material, which may be the same material as the first graphite material. The fins each extend at least partially into the base, and have a length extending away from the base parallel to each other. The graphite material of the fins includes graphene layers aligned in planes parallel to the length of the fins. Two constructions are provided for the base. In one construction the base includes graphene layers aligned in planes parallel to the length of the fins. In another construction the base includes graphene layers aligned in planes perpendicular to the length of the fins.